The Understanding by Design Guide to Creating High-Quality Units

Grant Wiggins and Jay McTighe

Evidence of Understanding

Recall the basic logic of the first two stages of backward design in UbD:

- What are the desired results?
- If those are the desired results, what follows for assessment?

As previously noted, when understanding is our goal, we need evidence that the students have successfully made meaning of the content (e.g., can draw sound inferences or make valid connections and explain these), as opposed to merely recalling something that the teacher or textbook said. Moreover, we are looking for the ability of learners to transfer prior learning to new or novel-looking tasks or settings, with minimal or no prompting from the test or the teacher. Both abilities require learners to also be able to continually address essential questions.

To be a valid test of understanding, then, success at the tasks or tests we design must depend primarily upon the depth of the understanding a student has, as opposed to mere facility with words, good recall, creation of a nice product, or skill in performing in front of others. In other words, as assessors we must be clear about the essential indicators of understanding and not be swayed by tangential qualities of performance or surface features of student work.

The following prompts (corresponding to the contrast just made) indicate the challenge ahead:

- Yes, the student is articulate and offers many facts; but is her argument logical and grounded in the content of the unit on World War II?
- Unfortunately, he forgets some details in *Charlotte's Web*; but doesn't he grasp the importance and consequences of the themes of friendship and motive?
- Yes, his rap was skillful and entertaining; but does the rap provide any solid evidence of understanding of *Winn Dixie*—the text it was supposedly based on?
- Alas, she produced a messy and poorly built Rube Goldberg–like machine; but doesn't her corresponding explanation of the physics nonetheless demonstrate genuine insight into the relevant principles?

Our point is not that features such as factual recall and oral proficiency should never count. Rather, because the goal is understanding, assessment should focus on it—even if we also want to give feedback on work quality, accuracy, and other elements.

You will recall our two-question test of validity in Module D: Could the student do the performance but not understand? And vice versa: Could the student do poorly at the specific test but still be said to understand based on other evidence? In Figure G.1 we offer a more comprehensive test of your tests, based on the ideas of this module.

Assessing understanding is thus harder than just making up a quiz to check for recall of facts or isolated skill proficiency (i.e., acquisition). There is always the danger that the different variables at work in performance might confuse or mislead us as to what the student truly understands. It's no wonder, then, that teachers and measurement specialists have long been drawn to simpler test items that isolate discrete knowledge and skills because these are quicker, cheaper, and less controversial to design, administer, and score. In general, however, such assessments cannot provide sufficient and compelling evidence of genuine understanding.

Assessments of Transfer

Common sense suggests that the ultimate test of genuine understanding concerns the ability to transfer: What can learners do with what they have learned in school? Although meaning-making is, of course, necessary, it is arguably not sufficient; transfer is our focus as educators. Learners have to be able not just to think well but to act effectively on their ideas, skill, and knowledge. That's why we place transfer at the top of Stage 1 and highlight transfer tasks in Stage 2.

But transfer doesn't mean just plugging content into a well-known format, pat problem, or familiar exercise. A valid assessment of transfer ability requires two elements not found in mere recall: a novel look and feel to the task, and a context that requires students to tailor prior learning to a concrete situation. Finally, students must be able to make these judgments and applications independently, as we discussed briefly in Module D.

This is not a new or controversial idea. Bloom and colleagues (1956) made this point more than 50 years ago in the Taxonomy:

> If the situations... are to involve application as we are defining it here, then they must either be situations new to the student or situations containing new elements as compared to the situation in which the abstraction was learned.... Ideally we are seeking a problem which will test the extent to which an individual has learned to apply the abstraction in a practical way. (p. 125)

Note two phrases that highlight the demands of genuine transfer versus mere plugging in: we are seeking a problem cast in *situations new to the student*, and a task that will test the extent to which the student has learned to apply an *abstraction in a practical way*. Having learned a concept, formula, method, principle, theory, or strategy (out of context, as an abstraction), we need to find out if students can use it effectively, in a specific, unfamiliar-looking but ultimately manageable context—with minimal teacher guidance.

Here are some examples of such transfer tasks related to abstract ideas:

habits of mind that both shape and impede their own understanding; are aware of what they do not understand in this context.

We do not intend that the six facets represent a theory of how people come to understand something. Instead, the facets are intended to serve as six helpful lenses or indicators of how understanding is often revealed in action—in performance, products, words, or behavior. Thus they provide practical frames for the kinds of assessments we might construct to determine the extent and depth of student understanding.

Using the Six Facets

To illustrate how the facets can suggest ideas for assessment, review the examples in Figure G.2. Figure G.3 helpfully places the six facets into a horizontal version of the first two stages of backward design, showing how assessments might be determined, mindful of the facets and the Stage 1 goals. You'll find additional prompts and ideas for using the facets in Figures G.4 and G.5.

It is important to understand that the goal here is not necessarily to have an assessment task for all six facets. Indeed, not every facet is well suited to every understanding. Nor is there a quota: Quality is not quantity. The facets are simply provided to help spark suitable assessment ideas. In reality, you might end up using only one or two of the listed ideas in your unit assessments. Nonetheless, many teachers have found that they come up with worthwhile ideas when considering the six facets. For example, in Figure G.5, the fourth verb listed under "Application" is *debug*. Here is an assessment task based on that idea:

> Alberto wanted to decide which of two spot removers is best. First he tried Spot Remover A on a T-shirt that had fruit stains and chocolate stains. Next he tried Spot Remover B on jeans that had grass stains and rust stains. Then he compared the results.
>
> *Explain:* What did Alberto do wrong that will make it hard for him to know which spot remover is best? How should he change his experiment?

Misconception Alert

Here are two common misconceptions about the six facets of understanding and their use.

1. *The six facets are listed in a hierarchy, like Bloom's Taxonomy.* Not so. The six facets of understanding were conceived as six equal and hopefully suggestive indicators of understanding and thus are used to develop or select assessment tasks and prompts. They were never intended to be a hierarchy.

2. *We must use all six facets when assessing understanding.* No. Designers should select the appropriate facet or facets depending on the nature of the content and

the desired understandings about it. For example, *interpretation* and *empathy* are appropriate facets to use in assessing students' understanding of a novel, whereas *application* and *explanation* fit naturally in mathematics.

Design Task: Examine the understanding goals you've identified for your unit and see how they might be better assessed using one or more of the six facets.

Design Tip: Have fun with the six facets. Because they represent neither a hierarchy nor a quota, you don't have to address all or most of them. They simply represent interesting possibilities for the design of understanding-focused performance tasks. Don't force it—for example, by trying to create an "empathy" task in mathematics. However, one chemistry teacher did come up with the following task idea by considering empathy: *Write an obituary for the death of an element in which you explain the effects of losing this element.*

Tasks and indicators. Once we start to think through what counts as appropriate evidence of goals we also realize that there are two related but *different* questions being asked in Stage 2:

1. What specific performance should students be able to do well, if the learning has been successful? In other words, what would be valid assessment tasks, questions, or challenges to find out if our teaching goals were met?
2. What would we have to see in order to say that the goals were achieved—regardless of the specifics of the item, question, task, or type of performance? Where should we look and what should we look for in student products and performances—regardless of the test particulars—to determine success or failure at meeting the goals?

These two questions are reflected in the UbD Template. In Stage 2 you are asked to consider the tasks that will provide evidence of Stage 1 goals (Question 1 above), and the criteria by which we look at (any) evidence related to a Stage 1 goal (Question 2 above). Once we clarify what we are looking for, the answer will be embodied in scoring rubrics and checklists. (We will have more to say about criteria, indicators, and rubrics in later modules.)

Assessing for Transfer Means Assessing for Autonomy

If transfer is the goal, then learners must be expected to (eventually) be able to use knowledge, skill, and understanding on their own. In a word, we always aim as teachers for autonomy—self-regulation and independence from teachers. That means we have to assess backward from self-regulated performance, over time. "My goal as your teacher is to make myself eventually unneeded," is how one teacher explains her role to her students.

Think of sports. The goal is to play the game well, on your own, with the coach on the sideline. And so practice is always designed mindful of the game, and

with understanding-related goals) has to be developed apart from the textbook, given your particular goals and context?

Take a minute to scan any relevant textbook chapters for assessments related only to one unit that you are teaching now. Given your desired results, and given the assessment implications of those goals, what can be found in the textbook to use as appropriate assessments—that is, appropriate to your specific Stage 1 goal elements?

Design Tip: Most textbook assessments emphasize discrete knowledge and skill goals. Rarely do textbook assessments honor higher-level, inferential understanding-focused goals—even if they glibly state that the task or question requires "critical thinking" or "analysis." Even rarer are assessments that ask students to make connections across chapters and topics, though such generalizations and comparisons and contrasts are at the heart of real understanding.

Self-Assessment—Review Criteria for Module G

Review your current unit sketch against the following self-assessment questions. Do the assessments of understanding—

- Require autonomous transfer to new situations?
- Reflect one or more of the six facets of understanding?

Revise your unit design as needed.

The Nutrition Unit Revisited

Figure G.6 shows new elements for the Nutrition unit described in earlier modules. Note that new ideas and adjustments from earlier versions are highlighted in bold.

For more help in using the six facets of understanding and developing assessment tasks, see the following online worksheets: Figure G.7, Developing Assessment Ideas Using the Facets; Figure G.8, What My Transfer Goals Imply for Tasks; and Figure G.9, Analyzing Textbooks and Instructional Resources for UbD.

Further Information on the Ideas and Issues in This Module

Understanding by Design, 2nd ed. (Wiggins & McTighe, 2005). Chapter 4, The Six Facets of Understanding. The goal of transfer is covered in various places, including pages 78–80.

Understanding by Design Professional Development Workbook (McTighe & Wiggins, 2004). Pages 155–172 and 197–206 provide many tools and exercises on the six facets and the design of relevant performance tasks.

Schooling by Design: Mission, Action, Achievement (Wiggins & McTighe, 2007). Chapter 2 discuses the goal of transfer, the difference between the "drill" and the "game," and the nature of genuine accomplishment as a basis for curriculum design. Chapter 3 discusses the need to frame curriculum around the key ("cornerstone") tasks at the heart of every subject area in light of the goal of transfer.

References

Bloom, B. (Ed.). (1956). *Taxonomy of educational objectives, handbook 1: Cognitive domain.* Chicago: University of Chicago Press.

McTighe, J., & Wiggins, G. (2004). *Understanding by design: Professional development workbook.* Alexandria, VA: ASCD.

Wiggins, G., & McTighe, J. (2005). *Understanding by design* (2nd ed.). Alexandria, VA: ASCD.

Wiggins, G., & McTighe, J. (2007). *Schooling by design: Mission, action, and achievement.* Alexandria, VA: ASCD.

Figure G.5

Performance Verbs Related to the Six Facets of Understanding

Explanation	Interpretation	Application	Perspective	Empathy	Self-Knowledge
demonstrate	create analogies	adapt	analyze	be like	be aware of
derive	critique	build	argue	be open to	realize
describe	document	create	compare	believe	recognize
design	evaluate	debug	contrast	consider	reflect
exhibit	illustrate	decide	criticize	imagine	self-assess
express	judge	design	infer	relate	
induce	make meaning of	exhibit		role-play	
instruct	make sense of	invent			
justify	provide metaphors	perform			
model	read between the lines	produce			
predict	represent	propose			
prove	tell a story of	solve			
show	translate	test			
synthesize		use			
teach					